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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
YANG, JIE				
ART UNIT		PAPER NUMBER		
1793				
NOTIFICATION DATE		DELIVERY MODE		
10/17/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/528,263

Applicant(s)

NAGAO ET AL.

Examiner

JIE YANG

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6 and 8-18 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-3, 5, 6 and 8-18 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-85/86)
Paper No(s)/Mail Date 8/7/08; 9/11/08
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
5) ☐ Notice of Inventor's Patent Application
6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

The listing of references in the IDS marked 9/11/2008 have been crossed out because 10/528,263 is the instant application, 12/160913 is not a searchable published document.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/28/2008 has been entered.

Status of the Claims

Claim 1 has been amended; claims 4 and 7 have been cancelled; claims 8-18 have been added as new claims, and claims 1-3, 5, 6, and 8-18 are pending in application.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In the instant case, the Applicants change the terms of "containing" and/or "comprising" in the original claim 1 to "consisting of", which are also used in the newly added claim 13 without any support in the instant specification. They are recognized as new matters because they are not fully supported by the original specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 5, 6, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroda et al (US 6,372,056 B1, thereafter US'056).

US'056 is applied to the claims 1, 3, 5, and 6 for the same reason as stated in the previous rejections dated 9/27/2007 and 3/27/2008.

Regarding the amended feature: at least on element selected from the group consisting of Nb, V, Ti, Hf and Zr: 0.1wt% or less (excluding zero) in total, US'056 discloses optional adding 0.02 to 0.09 wt.% Ti, which is within the range of 0.1% or less mass percent Ti as in the instant claim (Claim 2 of US'056); optional adding 0.02 to 0.5 wt.% Nb, which overlaps the range of 0.1% or less mass percent Nb as in the instant claim (Claim 2 of US'056).

Regarding claim 18, which includes the similar limitations as disclosed in claim 1 except including: performing a first cooling of the wire rod at an average cooling rate of 8 to 20°C/sec in the temperature range of from 900 to 670°C; and performing a second cooling of the wire rod at an average cooling rate of 1-5°C/sec in a temperature range of from 670 to 500°C, which are process limitations in a product-by-process claim. In the absence of structural characteristics imparted by the claimed process limitations, the claimed process limitations would not add patentable weight to the present titanium alloy bolt claims. MPEP 2113 R1.

Claims 1 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minami et al (NPL: Drawing high-grade steel wire rods without heat treatment" wire

Journal International, Vol. 16, XP008063056, pp. 236-247, Sept. 1983, thereafter, NPL-1).

NPL-1 is listed as reference in the newly received IDS marked 8/7/2008.

Regarding claims 1 and 18, NPL-1 teaches a high grade steel wire rod without heat treatment (Title of NPL-1) with the composition ranges (Table 2 of NPL-1) within the composition ranges of alloy as recited in the instant claim. NPL-1 teaches the rod has 5.5 mm to 50 mm diameter (Page 236, Col.2, 2nd paragraph to page 237, 1st paragraph); NPL-1 teaches major pearlite microstructure in the alloy; NPL-1 teaches tensile strength, reducing area, deviation of tensile strength, and deviation of reducing area (Table 4,6, Fig.7-9 of NPL-1), which reads on the corresponding limitations in the instant claims.

Still regarding claim 18, which includes the similar limitations as disclosed in claim 1 except including: performing a first cooling of the wire rod at an average cooling rate of 8 to 20°C/sec in the temperature range of from 900 to 670°C; and performing a second cooling of the wire rod at an average cooling rate of 1-5°C/sec in a temperature range of from 670 to 500°C, which are process limitations in a product-by-process claim. In the absence of structural characteristics imparted by the claimed process limitations, the claimed process limitations

would not add patentable weight to the present titanium alloy bolt claims. MPEP 2113 R1. The examiner notices NPL-1 further teaches the similar two step cooling (Fig.2 and 4 of NPL-1) as recited in the instant claim 18.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over US'056 in view of Tsukamoto (US 5,156,692, thereafter US'692).

US'056 in view of US'692 is applied to the claim 2 for the same reason as stated in the previous rejections dated 3/27/2008 and 9/27/2007.

Claims 8, 10-13, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US'056 in view of Bae et al (US 6,264,759 B1, thereafter US'759).

Regarding newly added claims 8 and 13, which include the similar limitations as disclosed in claim 1 except including B: 0.001 to 0.005wt%. US'056 is applied to the instant claims for the same reason as the rejection for the instant claim 1. US'056 does not explicitly state the alloy for a wire rod further contains B: 0.001 to 0.005%. US'759 teaches a method for manufacturing wire rods for using in making bead wires, wire ropes and spring (Abstract of US'759). US'759 teaches a wire rod alloy with major composition ranges (claim 1-4 of US'759)

overlap with the composition ranges recited in the instant invention. US'759 teaches B content should be preferably limited to 10-30 ppm (Col.5, line 55-64 of US'759). This B composition range is within the range of 0.001 to 0.005%wt. B as recited in the instant claims. US'795 teaches a similar composition alloy, with the similar degenerated pearlite structure for making the same high strength steel wire (Col.3, line 29 to col.4, line 26 of '759) as the instant invention. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add 0.001 to 0.005%wt. of B as disclosed by US'759 in the alloy of US'056 to reinforce the hardenability of the steel to inhibit the formation of ferrite (Col.3, line 51-60 of US'759).

Regarding claims 10-12 and 15-17, which depend on claims 8 and 13, respectively, US'056 in view of US'759 teaches the limitations of claims 8 and 13. US'056 discloses 0.2 to 0.5 weight percent Ni, which overlaps the range of 0.3 or less mass percent Ni as in the instant claims 10 and 15 (Claim 2 of '056). Regarding the limitations: "N is controlled to 0.01% or less N" (claims 11 and 16); "Al and Mg are controlled to 0.05% or less and 0.01% or less, respectively" (claims 12 and 17), which include "0" mass percent N, Al and Mg respectively. US'056 does

not specify wherein the alloy would contain N, Al and Mg.
Therefore, '056 would inherently satisfy these limitations.

Claims 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over US'056 in view of US'759, and further in view of US'692.

Regarding claims 9 and 14, which depend on claims 8 and 13, respectively, US'056 in view of US'759 teaches the limitations of claims 8 and 13. US'056 does not explicitly states alloy for wire rod wherein the average diameter of nodules in said pearlite structure is 10 μm or less. US'692 teaches a process for manufacturing steel wires for use in wire drawing, and particularly steel wires which are subsequently subjected to final wire drawing to form steel filaments which are used in the manufacture of steel cord wires (Col.1, line 6-10 of US'692). US'692 teaches the resulting pearlite has a pearlite block size of not greater than 5.0 μm , which is within the range of 10 μm or less nodules diameter of pearlite structure recited in the instant claims. US'692 teaches a similar composition alloy (Col.7, line 21-25 of US'692), with the similar fine pearlite structure (Col.3, line 16-27 of US'692), for the same steel wire drawing application (Col.1, line 6-10 of US'692) as the instant invention. Therefore, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to obtain fine pearlite grain size (or be called pearlite blocks), for example, less than 10 μm as demonstrated in US'692 in the process of US'056 in view of US'759 in order to improve drawability of the steel wire (Col.3, line 15-27 of US'692).

Response to Arguments

Applicant's arguments filed on 7/28/2008 with respect to claims 1-3, 5, 6, and 8-18 have been fully considered but they are not persuasive. The arguments related to the amended and newly added limitations, please refer to the discussions above.

Applicant's arguments are summarized as follows:

1, Kuroda et al (US'065) does not render obvious applicants claims because A) the Applicants have shown a "materially affecting the basic and novel characteristics of the claimed invention" as was determined in AK Steel Corp. v. Sollac with similar statement; B) Kuroda et al disclose only maximum tensile strengths and silent with to average tensile strength values and standard deviation of tensile strength;

2, Tsukamoto (US'692) does not disclose or suggest the limitations of Applicants' claims (namely: TS, RA, TS σ and RA σ). Bae et al (US'759) measures TS and RA for one sample wire each

produced by changing the production conditions. Thus, one cannot directly compare the mechanical properties of Bae et al. with those required by Applicants' claims.

Responses are as follows:

Regarding argument 1, as pointed out in the previous office actions marked 09/27/2007 and 3/27/2008, all five element composition ranges (C, Si, Mn, P, and S) disclosed by US'056 overlap the composition ranges of the instant claim 1, which is a prima facie case of obviousness. SEE MPEP 2144.05 I. More specifically, US'056 teaches Si could be 1.47wt%; P: 0.011wt%; and S: 0.009wt% (Table 1 of US'056), which meet the Si, P, and S critical ranges as recited in the discussion related to the alloy No.7 and 9. Regarding the argument related to the tensile strength, the Examiner disagrees with the Applicants argument, as pointed out in the previous office actions marked 09/27/2007 and 3/27/2008, US'056 teaches a rolled spring steel superior in workability with tensile strength less or equal to 1200 MPa (Abstract and Fig. 1 of US'056), which overlaps the claimed tensile strength range (912-1300(±30)MPa). US'056 teaches the measurement of standard deviation of Vickers hardness is smaller than 20, preferably less than 15 (col.4, line 1-12). The standard deviation of Vickers hardness is a substituting

equivalent to standard deviation of tensile strength and standard deviation of reduction of area in sense of uniformity of microstructure of materials, and the uniform microstructure would lead to less variation of mechanical properties, for example, hardness, tensile strength, and reduction of area. The above discussion is evidenced by US'056 (Col.4, line 1-12 of US'056). See MPEP 2144.06. The detail discussions related to the TS, RA, $TS\sigma$ and $RA\sigma$ as recited in the instant claimed can refer to the previous office actions marked 09/27/2007 and 3/27/2008.

Regarding the argument 2, applicant's arguments are against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant case, US'056 teaches the limitations of claims 1, 3, 5, 6, and 18; US'056 in view of US'692 teaches the limitations of instant claim 2; while US'056 in view of US'759 teaches the limitations of the instant Claims 8, 10-13, and 15-17; and US'056 in view of US'759 and further in view of US'692 teaches the limitations of the instant Claims 9 and 14. The motivations for combining these references can refer to office actions marked 09/27/2007 and 3/27/2008. Furthermore,

the Examiner notices there is no evidence to prove the data of US'759 (table 1-3 and examples 1-4) are from one sample wire each produced by changing the production conditions as asserted by the Applicants.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/

Application/Control Number: 10/528,263

Page 13

Art Unit: 1793

Supervisory Patent Examiner, Art Unit 1793